of his master's easy chair. A short time ago I had occasion to call on Mr. W., and the dog was, as usual, occupying the chair, from which he was removed to his basket. He showed his resentment of this disturbance of his slumbers by becoming very restless. Presently he trotted over to the door, which he rattled by pushing with his nose, his usual method of attracting attention when he wished to go out. His master immediately rose and opened the door, but instead of the dog going out he rushed back and jumped into the chair his master had just vacated! The rapid wagging of his tail and the expression on his face showed the dog to be very pleased with the result of his ruse. The dog has repeated the same joke once or twice since, with much evident delight to himself.

ARTHUR J. HAWKES.

Bournemouth.

Occurrence of a Tropical Form of Stick-Insect in Devonshire.

A FEW weeks ago I obtained through the kindness of a lady in Paignton a living specimen of a stick-insect, one of several individuals which had appeared in her garden. My example was met with on the plaster outside a window, and owing to the tenacity with which it adhered to its position required some force to dislodge it. I preserved it in captivity for about a fortnight, at the close of which period it died, having refused to feed on the foliage of any of the plants with which it was supplied.

It is an apterous female, and is, I think, referable to *Cladoxerus phyllinus*, Gray. I have not been able to obtain any clue as to the cause of its occurrence.

ROBERT O. CUNNINGHAM.

A Probable Variable of the Algol Type.

ON the evening of October 29, while examining the Pleiades with a binocular at about 9 p.m., G.M.T., I noticed that the star Atlas (27 Tauri) was slightly *fainter* than Pleione (28 Tauri), a little to the north of it. I did not remember at the time what the relative brightness of the stars was, and on looking them up in the Harvard Catalogues I was surprised to find that Atlas was measured 3·80 magnitude, and Pleione 5·19. I find that all the estimates for the last 300 years agree in making Atlas considerably brighter than Pleione. The nights following October 29 were cloudy, but on the evening of November 9 I found Atlas of its usual brilliancy, and more than 1 magnitude brighter than Pleione. The observed variation was therefore about 1½ magnitude. As Atlas is not a long period variable, it seems probable that it is a variable of the Algol type. The star should be watched, and observations for variable radial velocity would be very desirable.

J. E. GORE.

THE PREVIOUS EXAMINATION AT CAMBRIDGE.

THE first report of the studies and examinations syndicate, issued on November 11, deals with the previous examination. This is the first public test imposed on candidates for degrees at the university, and since 1822 has included a compulsory examination in both Latin and Greek. In response to a demand for reform sent up by teachers, parents, professional men, and men of science in the direction of making Greek, at least for some students, an optional subject—a demand supported by a large majority of head-masters and assistant masters in the secondary schools—the syndicate proposes a new scheme for the examination in which this demand is recognised.

Briefly, the scheme provides that for *all* candidates the "previous" shall consist of three parts, to be taken together or separately at the convenience of the student. Part i. includes Latin, Greek, French, and German, the papers in each to require unprepared translation and composition. "Set books" are abolished. A candidate may take Latin *and* Greek, or either Latin *or* Greek together with French or German. In other words, he must take *two* languages, of which one at least is an ancient classical language. Part ii. includes arithmetic, algebra, and geometry as heretofore. The paper on "Paley's Evidences" is abolished; it is not a school subject, and it is got up largely by an effort of memory from a bare abstract or analysis. Part iii. includes English composition as a compulsory subject, and two of the following alternatives: (1) English history; (2) scripture knowledge (a Gospel and Acts in English); (3) elementary organic chemistry; (4) experimental mechanics and other parts of elementary physics. Natural science, in the shape of physics and chemistry, is thus introduced for the first time. The syndicate was urged by weighty authorities to require from all candidates some knowledge of science; but, after full consideration, it is unable to recommend more than the inclusion of science among the alternative subjects. Probably, in view of the imperfect organisation of science teaching in many public schools of the classical type, to make science compulsory at this stage would have involved the adoption of a standard so low as in effect to discredit the subject.

For the benefit of certain students, among whom students of science may certainly be reckoned, to whom the power to read French and German is more important than a special knowledge of one only of these, it is provided that the translation papers in each of the two languages may be substituted for the translation and composition papers in one alone.

For a boy from a modern school or technical institute, therefore, the examination provided might thus include, for example, Latin, French, and German translation, mathematics, English composition, elementary chemistry, and elementary physics. On the other hand, a boy from a purely classical school might take the following combination: Latin and Greek, mathematics, English composition, scripture, and English history. For him the examination would be an improvement on the old "previous" examination, not only by reason of the higher standard proposed to be required, but also on account of the wider range of literary subjects to be included.

The report represents a serious attempt to recognise and to provide for the changes which are in progress in modern English education. By asking from every aspirant evidence that he has seriously studied *one*, at least, of the classical languages, it safeguards the traditional virtue ascribed to that form of intellectual training. By admitting that modern languages (including English) and physical science are possible components of a liberal education in the twentieth century, it indicates a certain widening of academic aims and ideals that may lead to better things hereafter. There is little doubt that the report will meet with strenuous opposition from those who, in the supposed interest of ancient learning, dare not make any concession to modern knowledge. It will not escape criticism from reformers of the more advanced type, who would sweep away Latin as well as Greek. But the proposals at least remedy a genuine grievance in a practical manner, and they make for progress along the lines of a sounder and broader education than the older universities have yet sought to foster.

THE EXPLORATION OF THE TRANSVAAL.[1]

IN this first report, drawn up by Mr. H. Kynaston and his colleagues, we see the prospect of healthy rivalry between the geologists of Cape Colony and of the newly acquired territories to the north. No time has been lost in issuing one of those small folio

[1] "Geological Survey of the Transvaal. Report for the Year 1903." Pp. ii+48; with 24 plates, folding maps, and sections. (Pretoria: Printed at the Government Printing Office, 1904.)

volumes, the form of which, however unsuited to our bookshelves, probably recalls to the Government printers the blue-books of the old home-country. No time has been lost, moreover, in the prosecution of researches which furnish something worthy to record,

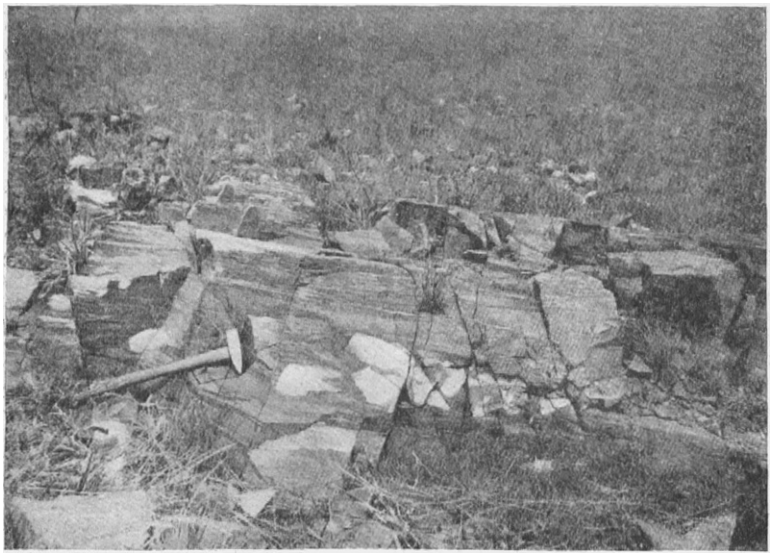

FIG. 1.—Waterberg sandstones near Balmoral, containing fragments of Pretoria quartzite.

and the results have here been illustrated on an excellent and liberal scale. Topographic work has been undertaken where existing surveys are deficient, and it seems probable that the geologists will run ahead, for some years to come, of the accurate mapping of the country. The beds dealt with are, firstly, the Pretoria series of quartzites and shales, which must have a high antiquity; secondly, the Waterberg sandstones and grits, which are now for the first time proved to be distinctly unconformable on the Pretoria series; and thirdly, the Karroo system, or rather systems, which opened under Glacial conditions, and were laid down on the denuded surface of the folded Waterberg series.

The two earlier series are thus clearly pre-Carboniferous. The Pretoria series is in places enormously swollen by the intrusion of diabase, which has worked its way along the bedding-planes with remarkable regularity. Where it breaks across the beds, it becomes slightly modified and charged with fragments from the quartzites. The Waterberg series near Balmoral has been invaded laccolitically by a granite, which is correlated with the red granite of the northern Transvaal. On its upper surface, which follows the planes of stratification of the overlying beds, it passes into a platy rock of the compact quartz-porphyry type.

Mr. E. T. Mellor regards the Waterberg series, with its coarse breccias and conglomerates, as deposited in waters swayed by powerful currents, torrents from the land being responsible for the earlier beds. Fragments of the Pretoria quartzites are found in these, affording additional proof of the unconformity (Fig. 1).

The Karroo beds similarly contain boulders of the rocks that preceded them, including the granite that rose beneath the Waterberg series. These boulders occur in the Glacial beds at the base of the system, corresponding with the Dwyka conglomerate of Cape Colony. These beds were laid down in a region already traversed by large streams, and it is very interesting to note that the modern Elands River, Bronkhorst Spruit, and Wilge River have cleared the Glacial beds out of the ancient channels, and have followed in the course of valleys that were long fossilised and lost to view.

As in Cape Colony, the Lower Karroo beds lie on handsomely glaciated surfaces. Dr. Molengraaff directed attention to these in 1898, and Mr. Mellor has described numerous new and admirable instances (Fig. 2). The uniform direction of the striæ from one exposure to another points to an ice-sheet, and not to local glaciers. The fact that the movement was from north to south, speaking in general terms, both in the Transvaal and in Cape Colony, only adds zest to the search for an explanation of this old Glacial epoch in the southern hemisphere. It is satisfactory to find that Dr. Molengraaff now concludes that even in the Vryheid district the ice-movement was from N.W. to S.E., *i.e.*, contrary to his previous suggestion.

Mr. A. L. Hall found in the area allotted to him an interesting series of igneous rocks, including a norite which, near Onderstepoort, has given rise to considerable masses of magnetite by a process of segregation.

FIG. 2.—Glaciated surface (Permo-Carboniferous glaciation), north of Douglas Colliery, near Balmoral.

It is not so clear, however, that similar internal processes, taking place during cooling, will account for the passage of the norite into red granite, described as occurring near the farm of Doornpoort. The facts noted, particularly the mottling of the granite near its margin, where it contains augite and decomposed

hornblende, seem to point rather to the formation of a composite rock along an intrusive junction.

Messrs. Kynaston and Hall conclude this important report with an account of what they style "diamondiferous" pipes and alluvial deposits. It is suggested that the diamond-bearing vents were connected with the great uplift that followed the close of the Karroo period in South Africa.

Some of Mr. Mellor's results, now detailed in the official memoir, were communicated earlier in 1904 to the Geological Society of South Africa, and have been incorporated in Dr. Molengraaff's "Geology of the Transvaal."[1] This handy work, the publisher of which is not named, now replaces the well known paper in the *Bulletin de la Société géologique de France* for 1901. It is accompanied by a coloured sketch map on the scale of 1 : 500,000.

GRENVILLE A. J. COLE.

OUR MUSEUMS.[2]

THE object of the association, of which the manifold spheres of activity are chronicled in the *Museums' Journal,* is the promotion of the better and more systematic working of museums. That museums are destined to play a very important function in the future education of our race every curator is fully convinced. Yet anyone perusing the pages of the *Museums' Journal* will be struck by the apparent want of unanimity among those into whose charge such institutions have been placed as to the best methods to be adopted in conveying to the public the educational advantages offered. A learned German museum official thought that if artistic skill were more cultivated the public would show increased appreciation for museums. He insists that the greater the knowledge of drawing in a community, the greater the value of a museum as an educational institution for a nation. Dr. Hecht, a French museum authority, advocates placing among natural history specimens a number of attractive and pleasing exhibits so as to lead the mind of the visitor to larger ideas, and to show him by well chosen illustrations in how many ways animal life is connected with human civilisation. Another gentleman argues that the doctrine of evolution should be the key-note of museum work, while Mr. Pycraft directs attention to a real defect in many of our museums in the manner in which our animals are mounted. He gives as an instance how the train of the peacock, commonly called its "tail," is often placed as if it arose from the hinder end of the body, while in reality when erect it stands in front of the wings, as shown in the accompanying illustration reproduced from Mr. Pycraft's paper.

"Would it not be well," remarks Dr. Bather very aptly in his excellent presidential address at the Aberdeen conference of the Museums' Association, "for each of us Museum curators occasionally to ask himself the question: What exactly is the object of my Museum?" While laying stress on inspiration as one of the principal functions of a museum, by which Dr. Bather understands the selection and display of material so as to attract members of the general public,

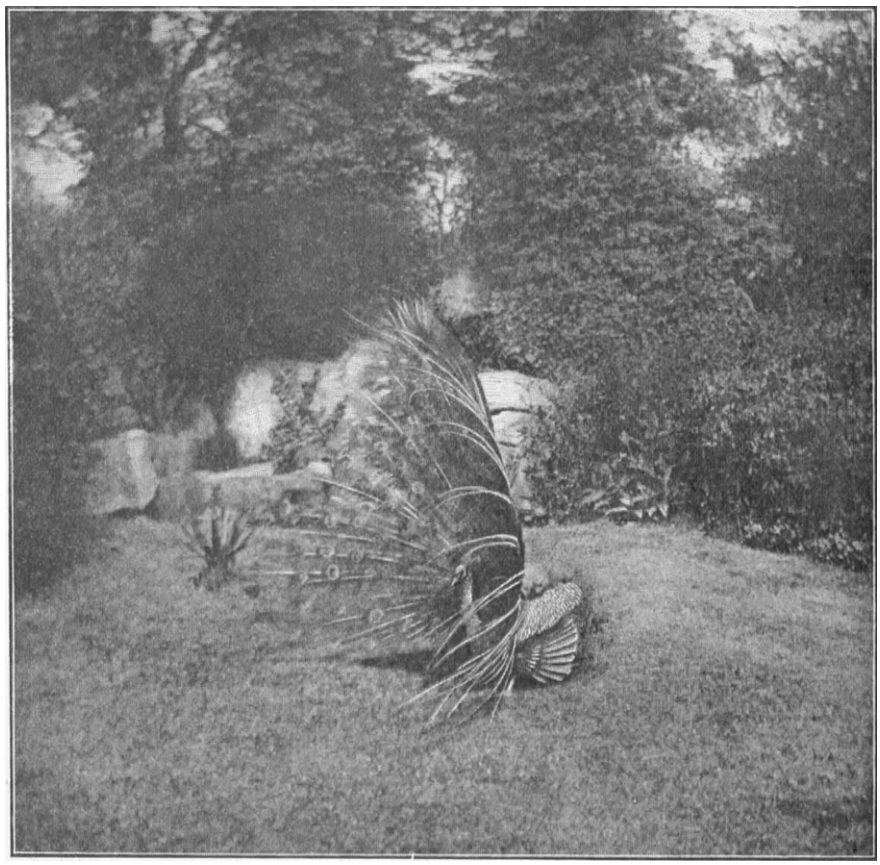

FIG. 1.—Side view of the Peacock in display showing that, when erect, the train stands in *front* of the wings, and not behind them. From the *Museums' Journal.*

he does not, however, touch upon the really vital point to the museum curator—how can we best induce the community to enter the doors of our institutions?

The scope of museums is extended from year to year, and everything is done to widen the sphere of their usefulness. A museum is no longer a place for exhibition only, but a place for research and investigation, and for the encouragement of those who desire to devote their time to such. Yet no one like the museum curator is more impressed with the fact that, in spite of all his efforts to make his collections appeal to the public, in spite of his heartfelt desire to teach both old and young, he only succeeds in attracting within the walls of the institution a comparatively small percentage of the community. What is really wanted, it seems to us, is that schools and museums

[1] "Geology of the Transvaal." By Dr. G. A. F. Molengraaff. Translated by J. H. Ronaldson, M.E. With Additions and Alterations by the Author. Pp. viii+90. (Edinburgh and Johannesburg, 1904.)

[2] *The Museums' Journal.* Edited by E. Howarth. Vol. iii. (July, 1903, to June, 1904). Pp. x+436 and 73–142. (London: Dulau and Co., 1904.) Price 12*s.* net.